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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/754,836	01/04/2001	Yoshinori Kadota	KAM 18.198	2670

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EXAMINER

THAI, LUAN C

ART UNIT	PAPER NUMBER
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2827

DATE MAILED: 01/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/754,836

Applicant(s)

KADOTA ET AL.

Examiner

Luan Thai

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 January 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) 5-8 and 10 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 9, and 11-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 8. 6) ☐ Other: _____

DETAILED ACTION

Election/Restriction

Applicant's election of Group I, claims 1-4, 9, and 11-12 in Paper No. 8 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)). Claims 5-8 and 10 have been withdrawn from consideration as being directed to a non-elected invention.

Information Disclosure Statement

1. The information disclosure statement (IDS) filed on 09/13/02 has been considered by the examiner.

Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Oath/Declaration

3. The declaration filed 01/04/01 is acceptable.

Claim Objections

4. Claims 1-3 and 11-12 are objected to because of the following informalities: in claim 1, line 3; claim 2, line 3; claim 11, line 6; and claim 12, line 6, the limitations "via halls" should be change to --via holes--. In claims 3 and 4, "the metal braces" should be changed to --the metal brace--. Also, in line 7 of claim 2 and in line 10 of claim 12, ",," (double comma) should be changed to --,-- (single comma). Appropriate correction is required.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-2, 9 and 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Asano et al (JP-411251471, applicant admitted prior art) in view of Wang (5,962,922).

The figures and reference numbers referred to in this office action are used merely to indicate an example of a specific teaching and are not to be taken as limiting.

Regarding claims 1, 9 and 11, Asano et al discloses (see specifically figures 1-8) a tape carrier for a semiconductor device comprising: a flexible insulation tape 22 for mounting semiconductor chips 24 and having via holes 36 there through at desired locations, a metal wiring layer 30/32 formed on one surface of the insulation tape 22 and electrically connected to the semiconductor chips via wirings 34, solder balls 26 formed on the other surface of the insulating tape 22 and electrically connected to the metal wiring layer 30 through the via holes 36, and a ring-shaped metal brace 38 formed on the other surface of the insulation tape at a location of the respective solder balls 26 in contact with the solder balls, wherein the ring-shaped metal brace is formed on the periphery of the opening of the respective via holes. Asano et al fail to teach the ring metal

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brace 38 having a cutout opening, which has a width up to 4% of the circumferential length of the periphery.

Wang while related to a similar semiconductor package design teaches (see specifically figures 7A-7B-7C-7D and 10-11-12) a ring-shaped metal brace 364 (e.g., the rim 364) formed on the bottom surface of the carrier 10 and electrically connected to the metal wiring layer 426, which is formed on the top surface of the carrier and electrically connected to a semiconductor chip 14 (via wiring 142) mounted thereon, wherein the ring-shaped metal brace 364 is provided with one or more than one cutout opening in order to let out air during soldering (Col. 2, lines 46+, Col. 3, lines 1+).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply Wang teachings of the cutout opening to the metal brace 38 in Asano et al's device package in order to let out air during soldering. Furthermore, the proposed device of Asano et al and Wang discloses all the limitations of the claimed invention as detailed above except for specifying the width of the cutout opening (up to 4% of the circumferential length of the periphery). It would have been obvious to one of ordinary skill in the art at the time the invention was made to form the cutout opening with the range as claimed, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPTO 233.

Regarding claims 2 and 12, the proposed device of Asano et al and Wang discloses all the limitations of the claimed invention, including the metal brace comprising a plurality of arcuate shape portions (see Wang's figures 7B-7C-7D), as detailed above, except for specifying the total width of the gaps (up to 40% of the circumferential length of the periphery). It would have been obvious to one of ordinary skill in the art at the time the invention was made to form the arcuate shape portions with the total width of the gaps in the range as claimed, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPTO 233.

7. Claims 3-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Asano et al (JP-411251471, applicant admitted prior art) and Wang (5,962,922) as applied to claim 1 above, and further in view of Glenn et al (5,796,163).

The figures and reference numbers referred to in this office action are used merely to indicate an example of a specific teaching and are not to be taken as limiting.

Regarding claims 3-4, the proposed device of Asano et al and Wang discloses all the limitations of the claimed invention as detailed above except for Ni plating and Au plating are applied to a surface of the metal brace.

A metal brace surface having Ni plating and Au plating formed thereon, however, is commonly applied in the art, specifically in solder ball connection art, as taught by Glenn et al, figures 1-3, Col. 4, lines 36+. The purpose of doing so is to simplify the process of soldering a bump to a metal brace of a carrier. It would

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have been obvious to one of ordinary skill in the art at the time the invention was made to apply Ni plating and Au plating to the surface of the metal brace of the proposed device of Asano et al and Wang in order to simplify the process of soldering the solder bump to the metal brace of the carrier.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Luan Thai whose telephone number is (703) 308-1211. The examiner can normally be reached on 7:00 AM - 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David L. Talbott can be reached on (703) 305-9883. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

A handwritten signature in black ink, appearing to read 'Luan Thai', with a long horizontal flourish extending to the right.

Luan Thai
December 30, 2002